WHAT IS CLAIMED IS:

1. A scanning apparatus for processing a substrate, the scanning apparatus comprising:

a base portion; and

a rotary subsystem comprising:

a first link comprising a first joint, wherein the first link is rotatably coupled to the base portion by the first joint;

a second link comprising a second joint, wherein the second link is rotatably coupled to the first link by the second joint, and wherein the first joint and the second joint are spaced a predetermined distance from one another, the second link further comprising an end effector whereon the substrate resides, wherein the end effector is operably coupled to the second link, and wherein the end effector is further spaced from the second joint by the predetermined distance;

a first actuator operable to continuously rotate the first link about the first joint in a first rotational direction; and

a second actuator operable to continuously rotate the second link about the second joint in a second rotational direction, wherein the end effector is operable to linearly oscillate with respect to the base portion along a first scan path upon the rotation of the first and second actuators.

2. The scanning apparatus of claim 1, wherein the first rotational direction is opposite the second rotational direction.

3. The scanning apparatus of claim 1, wherein the base portion is operably coupled to a translation mechanism, wherein the translation mechanism is operable to move the base portion in one or more directions with respect to the

translation mechanism.

4. The scanning apparatus of claim 3, wherein the translation mechanism is operable to move the base portion along a second scan path, wherein the second scan path is generally perpendicular to the first scan path.

5. The scanning apparatus of claim 3, wherein the translation mechanism comprises a linear drive system, wherein the linear drive system is operable to linearly translate the rotary subsystem in a direction generally perpendicular to the linear oscillation of the end effector.

6. The scanning apparatus of claim 1, wherein the end effector is operably coupled to the second link by a third joint, wherein the end effector is further operable to move in one or more directions with respect to the second link.

7. The scanning apparatus of claim 6, wherein the third joint provides the end effector with two or more degrees of freedom.

8. The scanning apparatus of claim 7, wherein the third joint is operable to provide a rotation and a tilt of the end effector with respect to the second link.

9. The scanning apparatus of claim 1, wherein the end effector comprises an electrostatic chuck.

10. The scanning apparatus of claim 1, wherein the first actuator

comprises a servo motor fixedly mounted to the base portion.

11. The scanning apparatus of claim 1, wherein the second actuator comprises a servo motor fixedly mounted to the first link.

12. The scanning apparatus of claim 1, wherein the first rotational velocity of the first actuator is operable to vary with respect to a location of the end effector.

13. The scanning apparatus of claim 1, wherein the second rotational velocity of the second actuator is operable to vary with respect to a location of the end effector.

14. The scanning apparatus of claim 1, wherein the base portion further comprises a prismatic joint, wherein the base portion is operable to move the rotary subsystem in one or more directions.

15. The scanning apparatus of claim 1, wherein the first link and the second link are generally parallel to a single plane.

16. The scanning apparatus of claim 15, wherein the end effector is further operable to rotate parallel to the single plane.

17. The scanning apparatus of claim 1, further comprising a controller operable to control a rotational velocity of the respective first and second links by controlling an amount of power provided to the respective first and second actuators.

18. The scanning apparatus of claim 17, further comprising one or more sensing elements associated with the first and second actuators, wherein the one or more sensing elements are operable to sense the rotational velocity of the respective first and second links and feed back the sensed rotational velocities to the controller.

19. The scanning apparatus of claim 18, wherein the one or more sensing elements comprise one or more encoders.

20. The scanning apparatus of claim 17, wherein the controller is operable to maintain the respective rotational velocities such that the linear oscillation of the end effector is generally constant within a predetermined scanning range of the end effector.

21. The scanning apparatus of claim 20, wherein the predetermined range of motion of the end effector is at least twice a diameter of the substrate.

22. The scanning apparatus of claim 20, wherein a maximum scan distance of the end effector is generally defined between maximum positions of the end effector when the first link and second link are fully extended, and wherein the maximum scan distance is larger than the predetermined scanning range of the end effector.

23. A method for scanning a substrate, the scanning method comprising:

providing a substrate on an end effector associated with a two-link rotary

subsystem, wherein the rotary subsystem comprises a first link rotatably coupled by a first joint to a base portion, the rotary subsystem further comprising a second link rotatably coupled to the first link by a second joint, and wherein a distance between the first joint and the second joint is generally equal to a distance between the second joint and the end effector;

rotating the first link and the second link in a respective first rotational direction and second rotational direction; and

controlling a respective rotational velocity of the first link and the second link such that the end effector linearly oscillates in a generally straight line, and wherein the first rotational direction and the second rotational direction remain constant.

24. The method of claim 23, further comprising electrostatically clamping the substrate to the end effector.

25. The method of claim 23, wherein the rotary subsystem is rotatably coupled to a base portion, the method further comprising linearly translating the base portion in a direction generally perpendicular to the oscillation of the substrate.

26. The method of claim 25, wherein the linear translation of the base portion is slower than the linear oscillation of the end effector.

27. The method of claim 26, wherein the base portion is translated one increment for every half oscillation of the end effector.